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Site selection for the tidal current turbine (TCT) in the Straits of Malacca

Tidal Current Turbine (TCT) is an emerging technology for Ocean Renewable Energy and is gaining popularity for the last few decades. TCT works under water in the similar way as a wind turbine. A tidal current turbine does not work in the air, but it works under water which has a density of about 800 times higher than air. Therefore, a rotor of tidal turbine is much smaller compared to a wind turbine to produce an equivalent power output. The small size of a tidal turbine keeps the lower cost of manufacturing, transportation and installation. The tides are more predictable compared to the wind. The power supply from the tidal turbine is predictable at different times in a day, whereas the power supply from the wind turbine sometimes relies on the weather.

The tidal current turbine can contribute to the increasing world's energy demand. The paper introduces the research of the Marine Renewable Energy

Research Group in University of Malaya. Malaysia is located in a strategic geographical location, which is excluded from natural catastrophes such as earthquakes and typhoons. Malaysia is also located by the Straits of Malacca which is one of the most important waterways and ship lanes in the world.

The Straits of Malacca has a huge potential for the development of TCT in Malaysia. Several factors must be considered in choosing the best places for TCT along the strait. The current flows along the Straits of Malacca northwardly to the deeper Indian Ocean. The strait has various depths ranging from 10m to 30m. The current speed along the Strait of Malacca has an average speed of 2 m/s and it gets faster to the northern part of it. For the TCT to work more efficiently, it will need a current speed of 2 m/s and above. However, several factors can accelerate the flow of water. These include the narrow strait between inlands, headlands, channelling waterways as well as the shallow parts of deep surrounding areas. There are several of such places along the Straits of Malacca which have been studied to identify the feasibility of these selected sites for the development of TCT in Malaysia.